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PSYCHOLOGICAL LITERATURE.

Measurements of Twins, by EDWARD L. THORNDIKE. Archives of Philosophy, Psychology and Scientific Methods, No. 1, Sept., 1905. New York, Science Press. pp. 64.

In this monograph Prof. Thorndike discusses by modern statistical methods the results of a number of mental and physical measurements made upon fifty pairs of twin children between nine and fifteen years of age. The mental tests turned upon the finding and marking of A's distributed among other capital letters; the finding and marking of words containing two designated letters (e. g. *e* and *r*) distributed among other words; the finding and marking of misspelled words in easy prose; adding; multiplying; and the writing of words opposed in meaning to words in a given list. The physical measurements included height sitting and standing, length, width and circumference of the head, length of certain finger joints and of the forearm from elbow to finger tip, besides notes as to resemblance in general appearance and in color of eyes and hair.

The results are discussed with reference to the degree of mutual resemblance of twins in comparison with that of other siblings (*i. e.*, children having the same father and mother), the degree of resemblance of the younger twins as compared with that of the older ones, the degree of resemblance in traits assumed to be little subject to training as compared with those in which training is assumed to be influential, and the degree of resemblance in mental traits as compared with the resemblance in physical traits.

The conclusions reached are: (1) that the mutual resemblance of twins in mental traits is about twice as great as that of other siblings (about .80 as against .40—unity being the standard of complete identity); (2) that the older twins show no closer resemblance than the younger; (3) that there is not much greater resemblance between twins in traits assumed to be much influenced by training than in others; and (4) that the resemblances in physical and mental traits are of about equal amount. In general "the form of distribution of twin resemblances seems to be that of a fact with a central tendency at about .80 and with great variability restricted towards the upper end by the physiological limit of complete identity."

In addition to these explicit results Prof. Thorndike draws from the figures and his interpretation of them certain inferences with reference to general questions of heredity, as, for example, that heredity is a much more important factor in determining the relative attainments of human beings than is environment; "that heredity is itself highly specialized, each minute feature of physical and mental make-up possessing its representative in the germs and varying more or less independently of other features of the same germ;" and that twins are probably derived from two ova, not from a single divided one.

The statistical method is a potent and delicate instrument and all English speaking psychologists remain in Prof. Thorndike's debt for his efforts, of which this paper is a part, to make modern statistical methods current in psychology; but it is still a machine, and as such incapable of changing the intrinsic character of the raw data submitted

to it and of interpreting the final figures which it produces. With reference to the mental tests Prof. Thorndike is himself careful to say that he does not regard the particular tests as an adequate measure of mental resemblances in general and that the conclusions reached have reference only to the traits tested. This should, of course, be borne in mind in estimating the justification and weight of the general inferences above mentioned. That Prof. Thorndike himself seems sometimes to forget this and to underestimate the intricacy of the action and reaction of heredity and environment is perhaps the chief criticism to be brought against the paper.

Full tabular statements of the original data in the case of the twins and of the various stages of the statistical evaluation are given; but so far as the reviewer has discovered, this is not the case for the sibs with whom the twins are compared. E. C. S.

Sociological Papers, III. By G. A. REID, W. McDUGALL, J. L. TAYLER, J. A. THOMSON, P. GEDDES, A. E. CRAWLEY, R. M. WENLEY, W. H. BEVERIDGE, G. de WESSELITSKY, MRS. S. WEBB, and H. G. WELLS. Macmillan & Co., Ltd., London, 1907. pp. xi, 382.

Like its predecessor (this *Journal*, xvii, 1906, 429), the new volume of the Sociological Society's publications contains eleven original papers, accompanied by discussion, written communications, and the author's reply. The high level of the two previous volumes is fully maintained. Indeed, it is probably safe to say that there is no annual volume which offers a greater interest to philosophically inclined students of the sciences of life and mind.

The eugenic problem is approached from two sides, practical and theoretical. In his paper on A Practical Eugenic Suggestion, Mr. McDougall advocates the remuneration of the services of every person belonging to a specially selected class (*e. g.*, the class of civil servants) not, as at present, according to some rigid scale, but according to a sliding scale such that his income shall be larger in proportion to the number of his living offspring. From the theoretical side, Dr. Reid endeavors, in *The Biological Foundations of Sociology*, to throw light on the questions of human heredity and variability; and Dr. Taylor, in *The Study of Individuals (Individuology) and Their Natural Groupings (Sociology)*, advances the thesis that the fundamental social formations are determined by the native characteristics of individuals.

A paper of great general importance to students of sociology is Professor Thomson's essay on *The Sociological Appeal to Biology*. The writer discusses various borderland problems involved in the relation of the two sciences, and thus places in their right connection a number of previously isolated studies. Professor Geddes's third paper on *Civics (A Suggested Plan for a Civic Museum or Civic Exhibition and its Associated Studies)* continues his attempt to afford insight into the life processes of the city.

A division of sociology not hitherto represented in the present series of publications, that of religion, is opened by Mr. Crawley's paper on *The Origin and Function of Religion*. Religion is defined as a psychic tone, temper, or diathesis; its sphere is the consecration of such elemental concerns as birth, adolescence, marriage, sickness and death; its objective, in one word, is life; and its first and last biological result is to raise human nature to a higher power.

Sociology is applied to the interpretation of concrete social phenomena in three papers: those of Professor Wenley on *Sociology as an Academic Subject*, by Mr. Beveridge on *the Problem of the Unemployed*, and by Mr. de Wesselitsky on *the Russian Revolution*.